

ABSTRACT OF THE DISCLOSURE

Non-naturally occurring mutant hemoglobins rHb (β N108Q) and rHb (β L105W) are provided that have a lower oxygen affinity than that of native hemoglobin, but high cooperativity in oxygen binding. rHb (β N108Q) also exhibits enhanced stability against autoxidation. The mutant hemoglobins are preferably produced by recombinant DNA techniques. Such mutant hemoglobins may be used as a component of a blood substitute and hemoglobin therapeutics.